

DOCUMENT RESUME

ED 243 572

PS 014 186

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TITLE The Park School Systems Approach to Piagetian Education.
PUB DATE Mar 82
NOTE 19p.; Revised paper prepared for the New England Conference (1st, Norwalk, CT, March 19-20, 1982).
PUB TYPE Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Curriculum; *Early Childhood Education; Educational Innovation; *Educational Strategies; Program Descriptions; *School Administration; *Systems Approach; Teacher Role; *Teaching Methods
IDENTIFIERS *Piagetian Theory

ABSTRACT

While three models of the application of Piaget's theory to education have been identified, the Park School (Norwalk, Connecticut) adds a fourth. This method involves a systems approach that extends beyond curricula and derives teaching techniques and administrative practices from Piaget's view. The approach uses logical games and interdisciplinary curricula with contents adjusted to the developmental level of students. Specifically, the school's curriculum is divided into "Do Tell" and "Don't Tell" components across the content categories of social knowledge, logico-mathematical knowledge, and representation. Thus, teachers are provided a guide to what ideas and information they should and should not present and what to let children learn from action on objects and reflexive abstraction. Other aspects of the Piagetian curriculum include (1) group sessions in which students describe their daily activities to each other; (2) activities based on Piaget's designation of the areas of knowledge; (3) a classroom for interdisciplinary curricula; (4) Piagetian-based forms in a management handbook designed to guide teachers in daily planning and evaluation activities, student and teacher evaluation procedures, and use of Piagetian and non-Piagetian testing and diagnostic instruments; (5) emphasis on multicultural education as part of the social knowledge curriculum; and (6) discrimination between habit and acts of intelligence. In conjunction with the Piagetian program, the school has developed and conducts a teacher education program through formal coursework and workshops. (An example is provided of a student evaluation describing to parents how basic concepts in the areas of knowledge are approached.) (RH)

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THE PARK SCHOOL SYSTEMS APPROACH
TO PIAGETIAN EDUCATION

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Revised paper prepared for the 1st NEW ENGLAND CONFERENCE, How to
Apply Piaget to Children's Learning, The Park School, Inc., Norwalk
Ct., March 19-20, 1982.

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THE PARK SCHOOL SYSTEMS APPROACH

TO PIAGETIAN EDUCATION¹

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INTRODUCTION:

To some educators, Piaget's greatest contribution has been his studies of how children reason and their internal processes of learning; thus providing education with a unique paradigm. Opportunities for personal growth-seeking behavior and solutions to crises and failures of current educational practices have created a community of scholars which view the Geneva School as a scientific source for reconstruction of current educational theory. Other solutions now proposed such as the back-to-basics movement, they believe, will compound the failures of current practices rather than to create constructive change.

That a Piagetian community truly exists is easily confirmed. An unprecedented number of "adherents" are engaged in examination and application of Piaget's work, particularly at doctoral and post-doctoral levels. Best of all, Piaget's contributions are sufficiently open-ended to allow all sorts of creative problem-solving for the community to resolve and to share.

The paradigm raises the question of "What is Piagetian?" This question is simultaneously asked and answered in Piagetian institutes which are emerging over the country and in part, an indirect purpose of this New England Conference on How to Apply Piaget to Children's Learning. The question can create a certain educational excitement because if we like, we may become involved in the development on the transformation of education.

The process of transformation has occurred in eleven-year development of The Park School to what we have now called "Systems Approach to Piagetian Education."

Available models of the application of Piaget's theory to education have been distinguished arbitrarily by Dennis-Prinzhom, Kami and Mounoud (1972) as occurring

1. In laboratory situations where a concept is taught using a specific Piagetian task.
2. In school settings where a certain part of the day is set aside to teach how to solve Piagetian tasks.
3. In school settings where an attempt is made to derive an entire curriculum broadly from Piaget's views of "knowing" and "learning."

¹ Revised paper prepared for New England Conference, How to Apply Piaget to children's learning. The Park School, Norwalk, CT March 19 and 20, 1982.

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Currently we add a fourth model which is, in a sense, an extension of the third. Our eleven years' experience has taught us the importance of emphasis upon teaching techniques and management methods which are "Piagetian." As Piaget's work becomes absorbed to practical use, I believe the systems approach comes from the evolution (or development) of Piagetian ideas in education. A systems approach extends beyond curricula and attempts to derive from Piaget's view, the other necessary components of a school system....teaching techniques, administrative practices such as student evaluations, teacher evaluations, diagnostic tests and school policies which support the curricula. Curricula is only one component of a school culture and other aspects should be compatible to support improvement in student learning which is to emerge from Piagetian approaches.

To derive a systems approach from Piaget's view of 'knowing' and 'learning' however requires that teachers and administrators must understand something of Piagetian theory; that is, understand the nature of the child's mind which emerges from the theory; understand teaching strategies such as "learning by being told" (summarized in this paper) and find those additional administrative components such as recording children's progress; planning, classroom management, ethics, parent/teacher relationships, collaboration with other professionals management practices which might be adapted or reorganized.

BACKGROUND

Since the first commitment of educators must be to students rather than to an educational ideology, educational theories besides Piagetian ideas are used at The Park School. However, since its organization in 1971, the Director and staff have given main attention to developing curricula, teaching practices and policies which may be considered Piagetian. Children are sometimes engaged in Piagetian tasks for diagnostic purposes or to help us evaluate the practical application of the theory. The transition to a Piagetian-oriented school did not happen overnight or in one school year. Even now, development of "parts of the whole" are continued.

Our staff is familiar with the work of American interpreters of Piaget's work, but the strongest influence has been his original work and our Park School interpretations. Since the school began with four bare walls and very little money, it has experienced its own "constant search for equilibration." It has moved from early empirical approaches to become increasingly Piagetian as the staff has used workshops built into the school calendar to develop programs, teaching techniques, methods of evaluation and the structures of "an Institution."

SOME ASPECTS OF THE PARK SCHOOL SYSTEMS APPROACH

Children are offered early experiences in symbol/object relationships or representation, but we tend to focus mainly on logical thinking and reasoning. Logico-mathematical Knowledge and Physical Knowledge were the first curriculum guides prepared. Since 1975, a developmental approach to games of chance and probability with children ages four and older has been stressed because of their contributions to reflexive abstraction. These and other games (exercise, symbolic and games with rules) were originally voluntary but in this past four years have been built into the weekly schedule of most students.

Many of the concepts in different areas of knowledge are developed through programs which are interdisciplinary. Toyshop, Pond Classroom and International Buffet are titles for curricula which we have developed for the children around real experiences. Such interdisciplinary programs may have a single base such as Social Knowledge and Representation are included. For the child, the curricula serve practical functions which emerge from reality.

These programs provide settings and materials which suggest interesting ideas to children and are considered particularly Piagetian because "The child can certainly be interested in seriating for the sake of seriating, and classifying for the sake of classifying, etc., when the occasion presents itself. However, on the whole it is when he has events or phenomena to explain or goals to reach in an intriguing situation that operations are the most exercising (p.26) (Piaget and Garcia, 1971 in Kamii, 1977)." Indeed, I have observed a five-year-old spontaneously seriating containers of spices which had been left on a table for use in the bread stuffing for the International Buffet Dinner. Further Piaget is quoted as stating, "The function of intelligence (operations).... is all the more stimulated and developed as the problems presented by reality are more varied and more interesting (p.29)." According to Kamii and DeVries, Piaget insists on the importance of the context within which logico-mathematical operations develop.

In contrast to traditional Core or integrated curricula, which emphasizes the interests of students, the interdisciplinary approach places responsibility for the content upon the teacher who takes into account the area of knowledge, the Piagetian levels of development, "child-centered." Although spontaneous learning constantly occurs as demonstrated by the five-year-old who seriated spice containers, the content of the curricula is directed by the teacher toward traditional and specific areas of knowledge.

The Park School approach utilizes logical games and interdisciplinary curricula in a developmental or a vertical decalage. That is, all children in the school are involved in the same games or investigations (Toyshop, Pond Classroom, etc.), the content reflecting the developmental levels of the students. For example, children (excluding threes) explore notions of chance but in different ways: using one die, recording the results of six pictorially (dots) on graph paper; using one die recording the number thrown; using two dice with adding and recording up to twelve, and so on. All are asked to reflect on the data on the graph and to make estimations concerning the next throw.

The vertical decalage applies particularly well to interdisciplinary programs. All children participate in Toyshop for example, the content dependent upon the age of the children. This approach differs from the Piaget-based SCIS program in which students study different fields of life science (or physical science) beginning with organisms in Grade 1 and ending with ecosystems in Grade 6. All study life science but something different.

In contrast, a four-year-old when selecting an item in Toyshop, experiences a practical application of provoked one-to-one correspondence when counting out, say four shells in order to get the item which is priced at four shells. When a child age 8 makes a selection, he or she has practical experiences in equivalency (of money) and the economic concepts of scarcity, pricing as related to supply and demand and so on. The vertical decalage creates a common culture within the school as teachers and students are united by the activity. Furthermore, the impact of the economic behavior of each group upon the other groups creates an awareness and cohesion among them and contributes to a socially and intellectually comfortable milieu. The whole school rather than one group is an economic community in ways which does not occur in economic programs in graded schools which normally limit their "stores" to one class.

A fourth criteria of the Park School approach which is uniquely Piagetian is the use of a teaching strategy related to equilibration and to types of children's thinking. Earlier I referred to "learning by being told" a Park School teaching strategy which grew out of two needs: one, a method of "discipline" and two, the need to clarify for teachers what children can learn only by social transmission and what is interference in the child's internal adaptation to knowledge; knowledge may not be a copy of reality according to Piaget, but there is a place in a Piagetian program for learning by being told. What to tell and what to let children learn from action upon objects and reflexive abstraction is a practical decision concerning teacher-student relationship. Clarification reduces chaos in the classroom because teachers give children the information they need to function effectively and without which they couldn't possibly know from experience. What to tell is determined by the teacher by determination of the type of thinking required of the students, using the following three types of thinking:

Reasoning concerning causal explanation implies the idea of cause of final cause; the relation between cause and effect; between the phenomena of two events. Ex: "The man fell off the bicycle because someone got in his way."

Reasoning concerning logical explanation involves justification, beginnings of proof, order, or rule, judgements, classes: Ex: Half 9 is not 4 because 4 and 4 make 8."

Reasoning concerning psychological explanation concerns subjective motivation and cause/effect relations for human intentions and actions. "I slapped Paul's face because he was laughing at me."

Examples (Incomplete)

DO TELL

(Logical Explanation)

Physical Knowledge

names of objects, animals
names of properties

Social Knowledge

habits
rules and qualified application
personal
cultural
community
names of economic concepts (as in Toyshop)

DON'T TELL

(Causal Explanation & Psychological Explanation)

observing attributes of objects,
water, air, living things
(feedback from objects)

Understanding other points of view

Economic concepts (of Toyshop)

Logico-Mathematical Knowledge

names of attributes of objects
number sequence

classification/set theory
seriation

Representation

Coding system-
signs, words, sound/symbol relations

reproductive images/thought

Following this model, The Park School curricula is divided into "Do Tell" and "Don't Tell" columns based upon the three categories. Teachers are expected to help children progress in knowledge in the "Don't Tell" column, using interview strategies lifted from Piaget's Grasp of Consciousness or by providing specific causal experiences in Physical Knowledge and Logico- Mathematical Knowledge.

Another Piagetian teaching technique is the daily use of "Evaluation" or social cognition which occurs at the end of each work period. Students gather together with the teacher to describe to each other what they did and how they did it. Although the quality varies depending upon the period of the students (preoperation, concrete-operational), teachers always encourage other students to ask for explanations encouraging in Piaget's view, logical, socialized thinking and the grasp of concept through reflexive abstraction. Students incidentally also develop effective communication and competence in negotiation, according to our observations and parent evaluations.

At The Park School, Piaget's designation of the areas of knowledge are the basis for our curriculum: Logico-Mathematical Knowledge, Social Knowledge, Physical Knowledge, plus Representation (not considered by Piaget to be an area of knowledge). Representation includes symbolic communication: imitation, language, graphic representation, music, art-such as crayonning, construction, collage and painting; reading and mathematical symbols, symbolic play, deferred imitation, drama, creative movement, blockbuilding and the like.

Pond Classroom which is an interdisciplinary curricula to which teachers add each year. Handbooks on Management (tests, forms, procedures, methods of Evaluation) and School Policy orient teachers to the Park School culture.

It is the material in the Handbook of Management which rounds out the systems approach. Piaget-based forms: a Teachers Daily Planning and Evaluation (Plan Book), Piaget-based Student Evaluations, Teacher Evaluation, Piagetian and non-Piagetian testing and diagnostic instruments, specifics on parent conference procedures, how we use Student Tutoring and Student Evaluation Time to promote student interaction, school policy on room arrangement and other strategies increase the effectiveness of the Piagetian curricula.

The five Guides are frequently revised and are always considered incomplete and subject to change.

In our interpretation of Piaget's work, heavy emphasis upon multicultural education is a large part of our Social Knowledge Curriculum. Our school includes children from different backgrounds and parents are invited to describe their personal values in "family meetings" of the school. Our Student Evaluations include Socio-emotional development among Cognitive Objectives, mainly because behaviorly, cognitive and social behavior are inseparable.

Student Evaluations are given to parents four times during the year. Each follows a different format. The February Evaluation is an Interdisciplinary Evaluation which describes to parents how basic concepts in the areas of knowledge are approached. A sample of such an evaluation follows:

the Park School

CREATIVE LEARNING AND
LOGIC FOR THE CHILD

Pink sheet
file

STUDENT EVALUATION

Name _____

Date February 28, 1979

Level (ages 4½ - 7 yrs. old)

Teacher's Name _____

In its evaluation of children's learning, The Park School categorizes content into three areas of basic knowledge described by Jean Piaget, Logico-Mathematical Knowledge, Physical Knowledge and Social Knowledge. A fourth area, Representation is included. Content of each category is listed below.

Some of the unique educational experiences offered your child by The Park School emerge from its interdisciplinary approach to these areas of knowledge. In this approach, the basic concepts are taught to your child through these special programs and this evaluation shows you not only what your child has learned, but how.

POND CLASSROOM

In the interdisciplinary Pond Classroom and Holiday Festival, we strive to develop basic concepts, pose questions and devise experiments and investigations to answer them, communicate, observe and order observations through 5 minute observational periods, develop interests and attitudes and an aesthetic awareness.

Bobby is enthusiastic and interested in Pond Classes. He eagerly explores the environment and is developing an awareness of the changes that take place (even so slightly sometimes). He can be very discerning. His observations have changed from "I see a duck" to "the ice is very thin in some spots".

Pond words are used in letter, sound and sight word and experience word recognition and writing. He can read many many words this way.

He also continues his skills in classification, seriation, and comparisons of pond objects. He is developing a wide repertoire of actions to perform on objects such as his completion of an endless list of things to be done with, and to an acorn.

Pond classroom studies for the next few months will be focused on comparisons of pond communities and aquarium communities in an effort to begin developing an ecological awareness.

Holiday Festival

The curriculum Holiday Festival offered many learning opportunities in logico-mathematical knowledge, social knowledge, physical knowledge and representation.

The planning, shopping, preparation, and cooking of the food provide experience in weighing and measuring liquids and masses in standard units (cup $\frac{1}{2}$ cup - tbsp tsp) pricing and observing and predicting change. These experiences were reinforced through many similar activities when we made the Pinata and stuffed it with goodies.

Some values of these experiences are indicated in an 8 pg. Festival booklet completed by Bobby. He demonstrated good recall of events of that day, and leading up to that day, and also demonstrated logical thinking. For example: one question is "There were 75 people at the dinner. How many plates were used? How many napkins were needed?"

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Bobby responded correctly and appropriately on most questions and enjoyed having his own book.

Two weeks before the actual Festival, the children participated in activities that would internalize the celebrations of other cultures including Holland, Germany, Italy and England which was highlighted by a Family Meeting with Mrs. Ash, a parent, sharing a Yule Log and stories of how the English celebrate the holiday season. Also Dr. Park shared Hanukkah celebrations with the school. Bobby personalized these experiences and shared his family celebrations-

Presently we are classifying and serializing turkey bones. The turkey has been served as hot turkey sandwiches, turkey salad, and turkey soup. Bobby enjoys cooking and snack preparations and observed the turkey in its many changes.

Bobby was particularly fond of the 'Pinata' experience from blowing up the balloons and making paper mache paste to the smashing of it and the "goodies grab". Many drawings since have had a pinata in it.

French

Bobby has had the opportunity to expand his language development in once a week French lessons by Mrs. Martha Salmon, a parent and teacher. The children have been exposed to counting to 10, learning color words, letter names, fruits and vegetables and songs; Jingle Bells, Happy Birthday, and A Croquette.

Bobby seems to enjoy these classes very much, repeats words quite exactly and recalls French words from lesson to lesson.

Music and Movement

Bobby usually joins in singing games and songs. Presently we are listening to folk songs from different countries and will learn some familiar ones.

Bobby is developing large motor skills through yoga exercises. Bobby is learning proper breathing, balance and coordination when he represents a frog, a cobra, a sleeping stork and swan. The exercises are getting increasingly more difficult. He often persists in practicing a particular position until he is satisfied with the results. Bobby is extremely agile and coordinated for his age.

Perceptual Motor Skills.

Bobby's fine motor skills are also above average as demonstrated by his ease of cutting paper to drawing a line between 2 other lines $\frac{1}{8}$ " apart without touching either line.

Representation

Pre-reading skills continue to be very important and have continued through Pond, Holiday Festival and daily experience stories. He is increasing his recognition of letters, sounds, and words. During the 'partner reading period' Bobby spends much time - (20 minutes - 1 hour) sitting with another child, (usually older by choice) listening and taking turns reading. He also, sporadically, loves to do work sheets and make books, accompanied by pictures. He also has begun joining sets with objects, pictures of objects and numbers (1+2, 2+1). He recently wrote correctly numbers. (1-29).

Other representations have been in Legos, sand and blocks, Designs are often intricately and delicately constructed, every block, etc, having a purpose.

Socio-Emotional Objectives

Bobby is very helpful, Friendly and considerate of Level I children in helping them get ready for outside play and occasional walks taken by both levels. He has also become a very active, influential and contributing member of the group. He works well alone and in a group.

During Meetings and Evaluations he gives perceptive and thoughtful responses. He listens very attentively during social knowledge lessons - (my telling them about special celebrations etc.) and story telling (the emphasis now on Grimm's Fairy Tales) making sure he knows 13

what is happening all the time. Bobby is definitely a leader, and not a follower, in group activities. A quality which I believe is developing very nicely in his present environment.

Special Skills and Abilities.

Bobby demonstrates exceptional skills in fine and gross motor activities. He is very independent and confident in his peer group. He has good listening skills. He stimulates discussions and has demonstrated exceptional reasoning skills. (estimating, predicting outcome, drawing conclusions)

Finally, we discriminate between habit and acts of intelligence. Piaget describes habit as automatized behavior. "Still not the same as intelligence, habit lacks a means/end differentiation which is based upon a general sensory-motor scheme (Piaget, 1969, 9-10; 1972a, 10, 150)." "An act of intelligence" according to Piaget, "such as finding a hidden object or reorganizing the meaning of a picture involves a certain number of paths (including space and time) which can be isolated and synthesized (Piaget, 1972a, 10)." Routine everyday tasks such as emptying baskets, washing bottles and the like are labelled Habit. Habits are established early in the year to free children and teachers to the task of the school...developing children's intelligence. The designation helps teachers avoid the traditional trap of assigning "busy work" which is habit, not acts of intelligence.

HOW DO WE ACCOMPLISH A PIAGETIAN PROGRAM IN A CURRENTLY NON-PIAGETIAN EDUCATIONAL WORLD?

When the school was established in 1971, finding teachers with knowledge of Piagetian theory was not possible. Candidates today come with a familiarity or a vocabulary confirming they have had some introduction to his work during their undergraduate years.

However, it has been necessary to develop our own teacher education program. Informal workshops prior to September openings became formalized in 1975 to become one-year (August 1 to July 31) Teaching Fellowships Piaget-based Clinical Experience in Developmental Teaching (CEDT). Fellowship teachers have received nine hours toward standard certification under Connecticut alternate route (P.A. 74-331) and nine graduate credits toward the master's degree from Fairfield University. Three one-week August workshops have been offered: Developmental Psychology; Theories of Jean Piaget and Barbel Inhelder; Application of Piagetian Theory to Curricula for Children ages 3-11; and Piaget-based Clinical Experience in Developmental Teaching. In 1982 the courses were restructured to three-day intensive seminar/workshops.

Designed to support change, two of the workshops offer four-hour supportive workshops during the school year. Fellowship teachers in the program interpret Piagetian approaches to parents/and to professionals at the annual March Piaget-in-Education Seminar sponsored by the School as part of their Leadership experiences.

Such experiences in justification promotes their own "reflexive abstraction", becoming more competent in their understanding of Piaget's theories.

The flexibility of the Curriculum Guides and the supportive workshops during the year give CEDT teachers much experience in curriculum development. Furthermore, a one-week June workshop is directly mainly to curriculum development. And to further understand the developmental approach, teachers give some part of their year to teaching children of other ages besides their own class.

SUMMARY/CONCLUSION

Summarizing the ideas presented on The Park School Systems Approach:

An interdisciplinary community of scholars has accepted the work of Piaget and his collaborators as a paradigm for puzzle-solving. One of the "puzzles" is how to apply Piagetian theory to education. In educational settings three ways of application have been identified:

- a) In lab schools where a concept is taught using a specific task
- b) In school settings where a portion of the day is set aside to teach how to solve Piagetian tasks
- c) In school settings where an attempt is made to derive the entire curriculum broadly from Piaget's view of "knowing" and "learning."

The writer adds a fourth, a systems approach which, like the third, attempts to derive the entire curriculum broadly from Piaget's views, but which extends Piaget's work to teaching techniques and to management components of a school system. The view is that these become supportive devices which contribute to the success of the Piagetian approach.

The Park School Approach requires curricula which are concerned with more than Piagetian tasks:

1. Curricula is categorized into the three Piagetian areas of knowledge; Physical Knowledge, Logico-Mathematical Knowledge, Social Knowledge, plus Representation.
2. The staff uses teaching techniques to emphasize reflexive abstraction.
3. Through Evaluation or Social Cognition (after Work Periods), through inter-group paired learning, and through "Family Meetings," teachers create student interaction among and between classes in the school.
4. Curricula is approached through mental action emerging from manipulation of materials or ideas.
5. Learning through familiar or found objects is coordinated with reflexive abstraction.
6. Basic concepts are taught in real-life situations as much as possible.
7. Interdisciplinary curricula is emphasized.
8. Pupil progress is evaluated in Piagetian with definitions for parents.
Parent-teacher conferences include these terms.
9. The school organization supports developmental approaches. At The Park School for example, multi-age groups contribute to a developmental approach to interdisciplinary programs (Pond Classroom, Toyshop, International Buffet) in which the whole school is involved, but in academic levels appropriate for each age.
10. In our management system, teachers evaluate their plan for each student at the end of every day.

11. Teachers evaluate concepts and tells information which is social-arbitrary; that which cannot be learned through cause/effect relationships.
12. Teachers are knowledgeable in Piagetian theory, allowing them to function more effectively in spontaneous and in planned decisions.
13. Teachers who have been most effective in this setting are those who are concerned mainly with self-growth.¹
14. Teacher effectiveness is measured in Piagetian terms using a self-rating and administrator-rated teacher/administrator conference twice yearly.
15. Student evaluations accompanying parent conferences are sent to parents in advance of the conference so parents may read them before, rather than during the conferences.
16. In The Park School approach, the staff evaluate all-school experiences of the children including playground, lunchroom, Extended Day experiences.

This summarizes the Piagetian approach as we presently view it at The Park School. Much of it may be adapted to other schools, mainly through appropriate teacher/administrator cooperation and realistic expectations. As I view it, it is not a materials approach but another way of looking at school life. It costs little, but funding is required mainly for staff and community development.

As practical use of Piaget's work increases in education, we can reasonably predict variations of this approach, particularly since the needs vary for each school system.

¹Kamii suggest starting with experienced teachers because beginners are pre-occupied with classroom management. Whether this is true in my experience is very dependent upon the individual. Some experienced teachers have been pleased to be "up on the latest" but have resisted change which they think rejects past successes. My experience has been difficulty moving teachers from empirical to Piagetian thinking.

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